

IN THE CLAIMS:

1 1. (Currently Amended) A chromatography column
2 having a column tube and end filter arrangements which,
3 in use, retain a bed of particulate chromatography medium
4 in the column tube between them while allowing the
5 passage of fluid for chromatography;

6 at least one of the end filter arrangements being at
7 the front end of a plunger which is axially slidable
8 along inside the column tube, makes a seal outwardly
9 against the tube and incorporates an internal flow
10 conduit communicating along the plunger between a
11 permeable filter portion of the respective end filter
12 arrangement and a rear part of the plunger outside the
13 column tube;

14 the plunger comprising a tubular stem of glass or
15 ~~other formable~~ thermoplastic material which defines in
16 one piece said internal flow conduit, the permeable
17 filter portion being integrally bonded to the front end
18 of the tubular stem across the internal flow conduit, and
19 an outer plunger wall spaced outwardly from said tubular
20 stem defining the internal flow conduit, the outer
21 plunger wall and tubular stem being integrally bonded to
22 one another at the front end of the plunger so as to seal
23 off an internal space of the plunger, around said tubular
24 stem, at the front end thereof.

1 2. (Original) A chromatography column according to
2 claim 1 in which the filter portion is integrally fused
3 to the plunger stem.

1 3. (Currently Amended) A chromatography column
2 according to ~~claim 1~~ or claim 2 in which both stem and
3 filter portion are of glass or thermoplastics material.

1 4. (Original) A chromatography column according to
2 claim 1 in which the tubular stem extends as a one-piece
3 integral whole back to a rear connection union at the
4 rear of the plunger.

1 5. (Original) A chromatography column according to
2 claim 4 in which the rear connection union has a joint
3 boundary at the exterior of the plunger stem.

1 6. (Previously Amended) A chromatography column
2 according to claim 1 in which an outwardly-directed
3 sealing portion at or adjacent the front end of the
4 plunger which makes a seal directly against the column
5 wall, or which mounts a deformable seal element for
6 making such a seal, is joined to the permeable filter
7 portion via a one-piece integral structure.

1 7. (Original) A chromatography column according to
2 claim 6 in which the permeable filter portion is bonded
3 to the plunger's outer wall by being integrally fused
4 therewith.

8. (Cancelled).

1 9. (Previously Amended) A chromatography column
2 according to claim 1 in which one end of the column tube
3 has a full-diameter opening receiving the plunger and the
4 other end is a closed end, converging to a union for an
5 external fluid flow conduit and having a fixed permeable
6 filter element across the column tube adjacent the closed
7 end.

1 10. (New) A chromatography column according to
2 claim 1 in which the tubular stem and outer plunger wall
3 are transparent.

1 11. (New) A chromatography column having a column
2 tube and end filter arrangements which, in use, retain a
3 bed of particulate chromatography medium in the column
4 tube between them while allowing the passage of fluid for
5 chromatography;

6 at least one of the end filter arrangements being at
7 the front end of a plunger which is axially slidable
8 along inside the column tube, makes a seal outwardly
9 against the tube and incorporates an internal flow

10 conduit communicating along the plunger between a
11 permeable filter portion of the respective end filter
12 arrangement and a rear part of the plunger outside the
13 column tube;

14 the plunger comprising a tubular glass stem which
15 defines said internal flow conduit, the permeable filter
16 portion being a sintered glass element integrally fused
17 to the plunger stem.

1 12. (New) A chromatography column according to
2 claim 11 in which the plunger further comprises an outer
3 plunger wall spaced outwardly from said tubular stem
4 defining the internal flow conduit, the outer plunger
5 wall and tubular stem being integrally bonded to one
6 another at the front end of the plunger so as to seal off
7 an internal space of the plunger, around said tubular
8 stem, at the front end of the plunger.

1 13. (New) A chromatography column according to
2 claim 12 in which the outer plunger wall has a
3 cylindrical sealing portion whose outer surface makes a
4 fitting seal against the column tube interior.

1 14. (New) A chromatography column according to
2 claim 13 in which the cylindrical sealing portion is
3 axially elongate and constitutes the means for aligning
4 the plunger axially in the column tube.

1 15. (New) A chromatography column according to
2 claim 12 in which the plunger comprises a sealing ring
3 fitting around the outer plunger wall to seal against the
4 column tube wall.

1 16. (New) A chromatography column according to
2 claim 13 in which the plunger comprises a sealing ring
3 fitting around the outer plunger wall to seal against the
4 column tube wall.

1 17. (New) A chromatography column according to
2 claim 11 in which one end of the column tube has a
3 full-diameter opening receiving the plunger and the other
4 end is a closed end, converging to a union for an
5 external fluid flow conduit and having a fixed permeable
6 filter element across the column tube adjacent the closed
7 end.

1 18. (New) A chromatography column according to
2 claim 14 in which one end of the column tube has a
3 full-diameter opening receiving the plunger and the other
4 end is a closed end, converging to a union for an
5 external fluid flow conduit and having a fixed permeable
6 filter element across the column tube adjacent the closed
7 end.

1 19. (New) A chromatography column comprising a
2 column tube and a self-aligning plunger axially slidably
3 receivable in the column tube;
4 the column tube having a first end with a
5 full-diameter opening removably receiving the plunger and
6 a second, closed end converging to a union for an
7 external fluid flow conduit;
8 a fixed permeable filter element being provided
9 across the column tube adjacent the second, closed end,
10 to retain in use one end of a bed of particulate
11 chromatography medium in the column tube while allowing
12 the passage to said union of fluid for chromatography;
13 the plunger having a front end slidable inside the
14 column tube and a rear end outside the column tube, the
15 front end of the plunger comprising a further permeable
16 filter element which retains in use the other end of a
17 said bed of particulate chromatography medium in column
18 tube, and the rear end of the plunger having a rear fluid
19 connection union;
20 the plunger comprising a tubular stem of glass or
21 thermoplastic material which defines in one piece an
22 internal flow conduit extending in the plunger from the
23 rear fluid connection union to the permeable filter
24 element, and having an integral front divergent portion
25 across which the permeable filter element is disposed,
26 the plunger further comprising an outwardly-directed
27 sealing portion making a slidable seal engagement against
28 the column tube wall, with an alignment structure of the

29 plunger making an axially-elongate fitting engagement
30 with the column tube wall to align the plunger axially in
31 the column tube;

32 the plunger's permeable filter element being of
33 glass or thermoplastic material and integrally bonded
34 around the front end of the plunger.

1 20. (New) A chromatography column according to
2 claim 19 in which the column tube and plunger are
3 transparent.

1 21. (New) A chromatography column according to claim
2 19 in which the column tube and plunger are of glass.

1 22. (New) A chromatography column according to claim
2 19 in which said alignment structure of the plunger is
3 provided by an outer cylindrical plunger wall spaced
4 outwardly from said tubular stem, the outer plunger wall,
5 tubular stem and permeable filter element being connected
6 to one another by integral fusing of their glass or
7 thermoplastic material to seal off an internal space of
8 the plunger, around said tubular stem, at the front end
9 of the plunger.

1 23. (New) A chromatography column according to
2 claim 19 in which the plunger has a machined glass
3 surface fitting and sealing directly against the column
4 tube wall.

1 24. (New) A chromatography column according to
2 claim 19 in which the outwardly-directed sealing portion
3 includes a rubber sealing ring.